Building Statistics

PART 1: General Building Data

Building Name: Student Resource Building

Location and Site: University of California, Santa Barbara
Santa Barbara, CA 93106

Building Occupant Name: UNIVERSITY OF CALIFORNIA SANTA BARBARA

Occupancy or Function Types: Primary: B
Secondary: A-3/ B-3

Mixed Use: University Administration and Multi-Function Spaces

Size: 68,413 SF

Number of Stories Above Grade / Total Levels: 3 Levels (all above grade)

Primary Project Team: **Owner:**
University of California Santa Barbara

Architecture, Interiors and Landscape Architecture:
Sasaki Associates, INC.
Website: http://www.sasaki.com/

Civil Engineering:
Penfield & Smith
Website: http://www.penfieldsmith.com/

Structural Engineering:
ARUP
Website: http://www.arup.com

MEP and Fire Protection Engineering:
ARUP

Telecommunications / Data, Audio / Visual and Acoustics:
ARUP

Code Consulting:
ARUP

Lighting:
Horton Lees Brogden Lighting Design
Website: http://www.hlblighting.com

Cost Estimating:
Davis Langdon Adamson
Website: http://www.davislangdon.com

General Contractor:
RQ Construction, INC.
Website: http://www.rqconstruction.com/

Electrical Subcontractor:
BERG Electric
Website: http://www.bergelectric.com/

Dates of Construction: **Start:**
Early Spring 2005

Estimated Completion:
November 2006

Cost: Accepted bid from RQ Construction, INC. : $18,986,000

Project Delivery Method: Design-Bid-Build

Architecture (Design and Functional Components): The building was designed to act as a gateway for the west side of the campus and strives to connect Isla Vista, an adjacent neighborhood to the core campus. It will also house many important student affairs bodies as well as other University administration offices. A prominent design feature is the triple height central forum space with pedestrian walkways located on either side of the upper levels. Other areas of interest include a double height, elliptical-shaped multi-purpose room on the north east side corner of the building and a Child Care Center on the south side which also features a garden pavilion.

Major National Model Codes:

1. (1997) Uniform Building Code (UBC)
2. (1998) California Amendments
3. (1998) California Building Standards Code
4. (1998) Title 24
5. (1998) California Code of Regulation (Parts: 1,2,6,7,8,10,12)
6. (1996) NEC and (1998) California Amendments, T24, CCR Part 3, California Electric Code
7. (1997) UMC and (1998) California Amendments, T24, CCR Part 4, California Mechanical Code
8. (1997) UMC and (1998) California Amendments, T24, CCR Part 5, California Plumbing Code
9. (1997) UMC and (1998) California Amendments, T24, CCR Part 5, California Fire Code
9. (1997) UMC and (1998) California Amendments, T24, CCR Part 5, California Fire Code
10. State Fire Marshal Regulations – Division 1, Public Safety, Title 19, CCR
11. Air Quality Management District Regulations
12. Americans with Disabilities Act (ADA), Title II, ADAAG
13. University Policy, “Seismic Safety”
12. (1996) NFPA No. 13,20,22,72
13. (1995) NFPA No. 24
14. UCSB Fire Protection Division Guidelines

Zoning: Site Area Approximately 85,168 SF

Historical Requirements of Building or Zone where Built: Not applicable.

Building Envelope Description: The northern façade is mainly made of highly transparent glass and metal curtain wall system that allows for efficient daylight utilization. The south facade is mostly clad with light-weight masonry rain-screen with smaller sunshade- equipped windows. The east and west façade uses a mixture of these elements.

Most of the lower roof is made of predominately built-up bituminous roofing with a 1/4”-1’-0” slope. However, the roof area above the central atrium is approximately 10 ft higher and is supported by steel trusses. Clerestories wrap all four sides which allow optimal daylight penetration into the open area below. The windows are also operable which allows most of the building to be naturally ventilated.

PART 2: General Building Data

Construction

The delivery method for this method was design-bid-build. Total cost of the project when bid was approximately $1.9 mil USD. Project implementation began around spring 2005 and the building is estimated to be completed by November 2006.

Electrical

The 12.47 KV incoming service is distributed to the different loads in the building via a series of 480/277V and 208/120V transformers. The main 480/277V transformer directs power to the main switchboard which houses 14 switches, 3 of which distribute power to separate 208Y/120V distribution boards. An additional switch also provides power to the emergency distribution board with the remaining providing power directly to a proportion of the panelboards in the building. Also located on-site is a 250KW 408/277V diesel emergency generator which provides power to the emergency distribution board in the event that the main transformer experiences technical difficulties.

Existing Lighting

In order to satisfy California's Title 24 requirements, the interior of the Student Resource Building was designed to utilize energy saving light fixtures which employed predominately fluorescent or compact fluorescent fixtures. Although tungsten halogen and metal halide sources have also been used but their placement has been restricted to only provide light to the pedestrian bridges as well as general illumination to the forum level. With the exception of any tungsten halogen and metal halide sources, most interior fixtures are operated at 277V.

The exterior of the building is also lit by a variety of fixtures. Some operate on 277V and others on a 120V system. The lamps that these fixtures use include compact fluorescents, metal halides and tungsten halogen sources.

During daylight hours, sunlight penetrates the central forum space via the operable clerestory windows around the periphery of the raised roof. Controlled amounts of daylight are also allowed into the building via the north façade as it is made of highly transparent metal and a glass curtain wall. Windows on the southern façade come with sunshades.

There are two lighting-control panels (LCP) on each floor. A north-facing low-voltage photocell is connected to one of the two on the third floor and sits 48" above the roof to monitor the amount of the daylight available throughout the day. As most of the lighting systems in this space are dimmable, the amount of daylight measured by the photocell will in turn affect the electric light output in the building. Each LCP can be programmed and can also be regulated by a timer

module.

Mechanical

The Student Resource Center has 6 hydronic air handling units (AHU) that are located on the roof. Five of the six uses a built-up VAV system with the sixth one being CAV. Collectively, the system is designed to bring in 12,260 CFM of outdoor air into building. All six of them have a programmed switched time control and cooling setback. AHU-6 provides dedicated service to the multi-purpose room while the rest service the different floors in the remainder of the building. Clerestories that wrap the perimeter of the high roof feature operable windows which allows for natural ventilation in the space. The majority of the mechanical ventilation systems are limited to internal spaces inside the building and the HVAC system is connected to the campus chilled water loop, hence eliminating the need for providing additional cooling towers.

Structural

All structural concrete used in construction has a compressive strength of 4000psi and a density of 150pcf. A two-way slab system using typically 8” thick reinforced concrete is employed throughout the building. Walls and partitions in the main building are predominately constructed with reinforced concrete. At the foundation, spread footing sizes vary. Their width ranges from 5’-0”, length from 3’-6” to 12’-0” and thickness from 1’-4” to 2’-3”. Most of the reinforced concrete columns are either square 18”x 18” or circular with an 18” diameter. Typical spacing between them ranges between 20’-0” to 23’-0” O.C. Ten 8” diameter pipe columns are located behind the glass curtain wall on the north façade of the multi-purpose room. Slabs are constructed of reinforced concrete embedded with a wide range of rebars.

The single story Child Care Center is built using steel construction. Predominately W12x22s line the perimeter of the roof with W10x12 joists that span 10’-0” between the two sides. On the perpendicular section of the Child Care Center that is adjacent to the main building, 2” seismic joints have been put in place at the corner sections.

The framing of the lower roof consists of either W14x20 or W14x22 joists with predominately W14x30s or W14x38s along the perimeter. The framing of the high roof above the central forum is composed of W14x53’s spaced evenly along its length which is in turn diagonally braced by HSS6x6x1/2’s. This system is enclosed by HSS8x4x1/4 that runs along its perimeter. Beneath is an exposed cross-bracing system that utilizes 1-1/2” diameter rods. Roofing material is predominately built-up bituminous and manufactured roofing material.

Plumbing

A gas fired domestic hot water heaters manufactured by Lochinvar is located in the mechanical room. It has a 75 gallon storage capacity. The pressure reducing valve in this system is designed to withstand water pressure between 100 to 105psi and an allowable pressure drop of 3 psi per 100 ft. A 1.25" medium size natural gas service pipe supplies the building. In the event of significant seismic activity, this supply will be shut off by a seismic valve.

Fire Protection

For the safety and well-being of the occupants inside the building, a fire alarm system is installed at the SRB per applicable codes. Fire and Smoke Barriers are UL listed and have a 2-hr assembly rating. Roof panel systems also have a 2-hr assembly rating. Sprayed on fire proofing is done on primary members that are essential to the stability of the SRB have a 1-hr rating. These would include: columns, girders, beams and trusses.

Secondary members which are not part of the structural frame are also sprayed with fireproofing that has the same rating.

Transportation

The passenger hydraulic elevator that is installed near the west entry at the SRB has a capacity of 3500 lbs and is able to move at 150 fpm. It requires 208V and operates using an AC motor. In the event of a black-out, it will still be functional under the emergency power system. The elevator is also equipped with a load weight device connected to an alarm.

Telecommunications

Almost every space inside this building contains wall-mounted communication outlets. This includes the rooms inside the attached Child-Care Center. In the main building, two 12" communications cable trays run through the north and south side of the building on each floor to service the different workspaces. A 24" tray is located in the tech/computer room on the ground floor. Telecommunications to the rest of the campus is provided by two 3" conduits that are fed to the ground floor communication room on the west side of the building. Subsequently, data is transferred to the separate communication rooms distributed throughout the building via communications conduits.